

Attachment 4 – Estimated Capital Cost



T.E. Maxson WWTF Process and Biogrades Upgrade Program Opinion of Probable Construction Cost by Scope Item Update July 2018

Maxson Process Upgrades

GMP 1 – PAA Disinfection Tanks and Effluent Piping Structure Upgrades (Under Contract):

Disinfection Scope	Construction w/ Add Services
Effluent Pump Station Improvements	\$1,297,505
Disinfection System and Yard Piping	\$23,242,476
Outfall Channel Repairs – City of Memphis to self-perform	\$0
Effluent Hydraulic Improvements and Site Work	\$10,824,887
Main Electrical Service	\$4,146,677
NPW Pump Station	\$1,119,311
Design Amendment and Construction Services	\$1,600,466
Over-Excavation Allowance	\$170,000
PeroxyChem Stainless Steel Baffle Allowance	\$600,000
EPS Temporary Power Allowance	\$360,000
TOTAL	\$43,361,322

1. Construction services and general conditions for CMAR contract are included in non-Allowance items.

GMP 2 - Headworks Improvements (Under Contract):

Headworks Improvements	Construction w/ Add Services ¹
Headworks Improvements	\$5,868,389
Bypass Pumping Allowance	\$4,853,754
TOTAL	\$10,722,143

1. Construction services and general conditions for CMAR contract are included in non-Allowance items.

GMP 3 –Two Secondary Clarifiers, Odor Control Improvements, and Fine Bubble Conversion

Settling Improvements	2017-08 Construction OPCC ¹
Site Work	\$3,700,000
Yard Piping	\$2,000,000
Existing Aeration Basin Upgrades	\$7,300,000
New RAS Reaeration Basin	\$1,200,000
Flow Control Structure (FCS)-Moved from Package 4	\$1,200,000
New Final Clarifiers	\$13,600,000
New RAS Pump Station	\$4,600,000
Diversion Structure @ Screw Pump Station	\$2,400,000
Covers @ Screw Pump Station	\$200,000
HW (Coarse Screening & Grit) Odor Control	\$5,900,000
Coarse Screen Building	\$110,000
Influent Junction Box Odor Control	\$1,400,000
Intermediate PS & Primary Clarifiers 3/4 Odor Control	\$4,300,000
Primary Clarifiers 1/2 & Fine Screens Odor Control	\$3,000,000
Design Amendment for Odor Control	\$550,000
Over-Excavation Allowance	\$75,000
Existing Aeration Basin Air Piping Leak Repair Allowance	\$200,000
TOTAL (ROUNDED)	\$51,700,000

1. Construction services and general conditions for CMAR contract are included in non-Allowance items.

GMP 4 – RAS Re-aeration Basin

Settling Improvements	2017-08 Construction OPCC ¹
Site Work	\$2,100,000
Yard Piping	\$10,300,000
New RAS Reaeration Basin	\$19,200,000
Flow Control Structure (FCS)	\$480,000
New Blower Building	\$13,100,000
New Electrical Building	\$2,300,000
Over-Excavation Allowance	\$170,000
TOTAL (ROUNDED)	\$47,700,000

1. Construction services and general conditions for CMAR contract are included in non-Allowance items.

GMP 5 - Existing Trickling Filter Upgrades

Biotower Improvements	2017-08 Construction OPCC ¹
Biotower Media Replacement and Arms (6 Biotowers)	\$41,700,000
Biotower Dispersion Fans	\$16,200,000
Electrical and Instrumentation	\$2,500,000
Trickling Filter Concrete Repair Allowance	\$1,000,000
Overall Project Plant O&M Manual	\$1,200,000
TOTAL (ROUNDED)	\$62,600,000

Process Upgrades Project	2017-08 Construction OPCC
Overall Maxson Process Upgrade Project Total (ROUNDED)	\$216,100,000

Stand-alone Projects

Stand-alone Projects	Project Cost Opinion
Biosolids Lagoon 5 Renovation	\$33,000,000
Lagoon 2A Renovation	\$4,400,000
Maxson WWTF Administration Building	\$4,000,000
Primary Clarifier Pumping and BFP Improvements	\$19,000,000
TOTAL	\$60,400,000

T.E. Maxson WWTF Process and Biosolids Upgrade Program	Overall Program Estimate
Overall Maxson Process Upgrade Project Total (ROUNDED)	\$276,500,000

Attachment 5 – Environmental Documentation



Department of
**Environment &
Conservation**

Division of Water Resources / State Revolving Fund Loan Program

William R. Snodgrass TN Tower, 12th Floor
312 Rosa L. Parks Avenue, Nashville TN 37243
Phone: (615) 532-0445

January 26, 2016

RE: Categorical Exclusion Determination Email Transmittal
Memphis (Shelby County), Tennessee
Loan No. SRF 2015-355
Modifications and Upgrades to the Existing Treatment Processes and the Addition
of Disinfection Facilities at the T. E. Maxson Wastewater Treatment Plant

Dear Recipient:

Transmitted by means of this email is a Categorical Exclusion (CE) package for the above-referenced project. The State Revolving Fund (SRF) Loan Program has reviewed the documents associated with the Facilities Plan in accordance with appropriate State rules, policies, regional guidance, and technical publications. The State's analysis concludes that the Facilities Plan will not significantly affect the environment; accordingly, the SRF Loan Program is issuing this CE for public review.

Comments supporting or disagreeing with this proposed action received within 30 days of the date of this CE will be evaluated before we make a final decision to proceed. If you wish to comment or to challenge this CE, send your written comment(s) to:

Mr. Sam R. Gaddipati, Environmental Manager
Division of Water Resources, State Revolving Fund Loan Program
William R. Snodgrass TN Tower, 12th Floor
312 Rosa L. Parks Avenue, Nashville, TN 37243

or call or email (615) 532-0462 or sam.gaddipati@tn.gov.

Sincerely,

Sherwin N. Smith, Director
State Revolving Fund Loan Program

cc: Mr. Sam Gaddipati, Environmental Manager, SRF Loan Program (via email)
Dr. Bagher Sami, SRF Administrative Section Manager (via email)
Ms. Felicia Freeman, SRF Technical Section (via email)



Division of Water Resources / State Revolving Fund Loan Program

William R. Snodgrass TN Tower, 12th Floor
312 Rosa L. Parks Avenue, Nashville TN 37243
Phone: (615) 532-0445

CATEGORICAL EXCLUSION DETERMINATION

For the Proposed Project of Memphis (Shelby County), Tennessee

Loan No. SRF 2015-355

January 26, 2016

The Tennessee Department of Environment and Conservation's (Department) State Revolving Fund Loan Program has conducted a review of the above-referenced project in accordance with the Operating Agreement between the Department and the U.S. Environmental Protection Agency (EPA) for implementing the Clean Water State Revolving Fund (CWSRF) Loan Program. The Department has determined that this project is eligible for a Categorical Exclusion (CE). Accordingly, the Department is exempting the project from further substantive environmental review requirements under the Department's EPA-approved National Environmental Policy Act-like environmental review process. The project consists of modifications and upgrades to the existing treatment processes including removing the bio-towers from service, additional aeration tank volume, a new secondary blower building, additional secondary clarifiers, a new return activated sludge/waste activated sludge pump station, an anaerobic selector, and new disinfection facilities at the T. E. Maxson Wastewater Treatment Plant (WWTP). All construction activities will occur on the T. E. Maxson WWTP's existing site. The total estimated project cost is \$85,000,000. This project will be constructed in multiple phases and the City of Memphis has requested a CWSRF loan in the amount of \$25,000,000 to complete the first phase of the project. A copy of the map showing the project location accompanies this CE.

The project is eligible for a CE because undertaking this action:

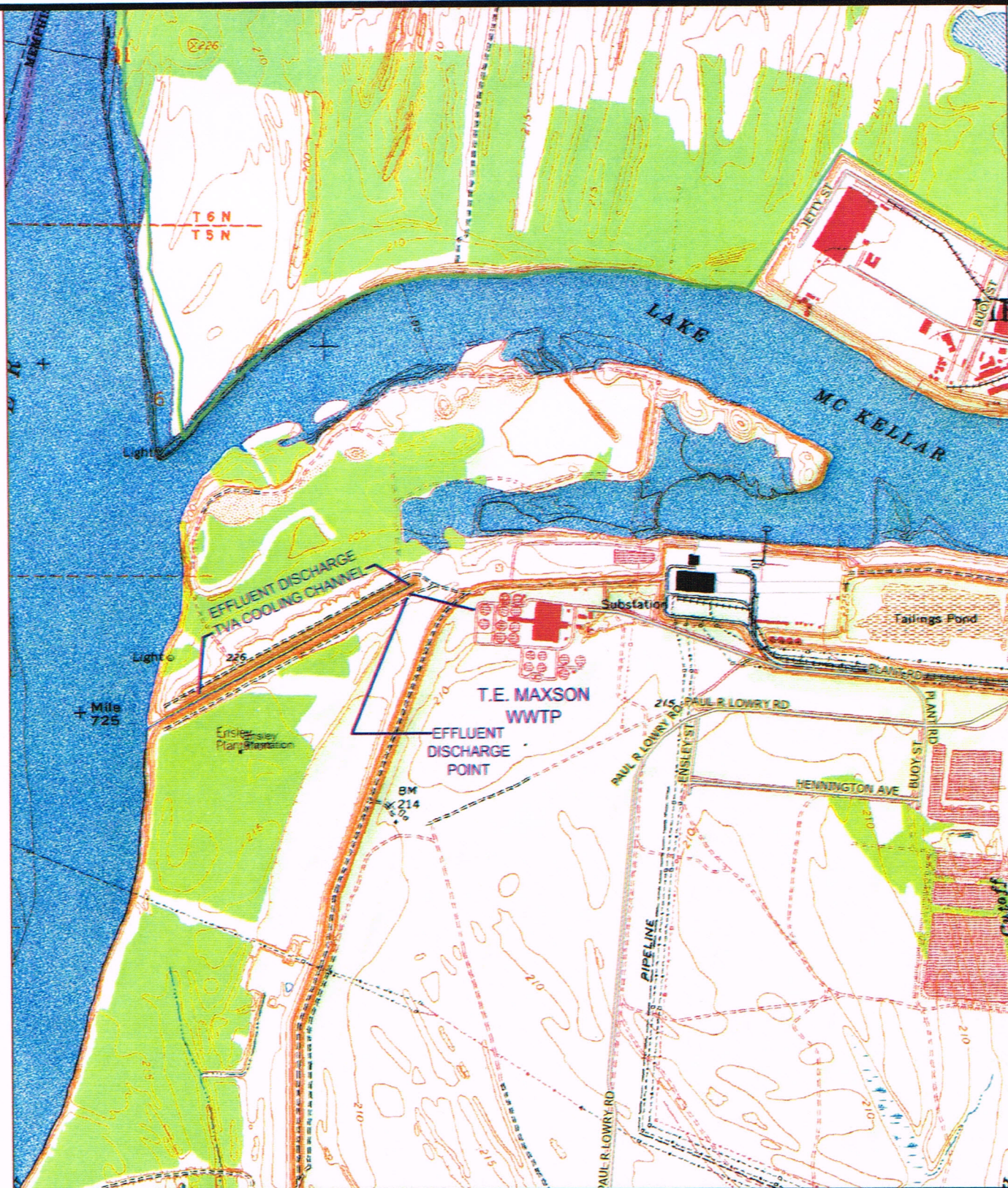
1. Will not create a new or relocate an existing discharge to surface or ground waters
2. Will not substantially increase the volume of discharge or load of pollutants
3. Will not provide capacity to serve a population 30 percent greater than the existing population
4. Will not have a significant effect on the quality of the human environment
5. Will not directly or indirectly affect cultural resources, habitats of endangered or threatened species, or environmentally important natural resources areas
6. Is cost-effective and should cause no significant public controversy

The determination shall become effective upon its distribution by the Department and can be revoked at any time that adverse information is made available. The documentation to support this decision will be on file with the Tennessee Department of Environment and Conservation's State Revolving Fund Loan Program and available for public scrutiny upon request.

If you wish to comment or to challenge this CE, send your written comment(s) to:

Mr. Sam R. Gaddipati, Environmental Manager
Division of Water Resources, State Revolving Fund Loan Program
William R. Snodgrass TN Tower, 12th Floor
312 Rosa L. Parks Avenue, Nashville, TN 37243

or call or email (615) 532-0462 or sam.gaddipati@tn.gov.



T.E. MAXSON WWTP IMPROVEMENTS

MEMPHIS, TENNESSEE: FLETCHER LAKE QUADRANGLE MAP

SCALE: 1" = 2,000'



NORTH

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Attachment 6 – O&M Plan

- January 5, 2016 Plan of Operation Approval Letter from TDEC
- August 27, 2015 Certification of Plan of Operation Letter from City of Memphis to TDEC



Department of
**Environment &
Conservation**

Division of Water Resources / State Revolving Fund Loan Program

William R. Snodgrass TN Tower, 12th Floor
312 Rosa L. Parks Avenue, Nashville TN 37243
Phone: (615) 532-0445

January 5, 2016

The Honorable A. C. Wharton, Jr., Mayor
City of Memphis
Email Transmittal to *mayor@memphistn.gov*

RE: Plan of Operation Approval
Memphis (Shelby County), Tennessee
Loan No. SRF 2015-355, T. E. Maxson Wastewater Treatment Plant Improvements Project

Dear Mayor Wharton:

The State Revolving Fund Loan Program acknowledges the receipt via email on September 2, 2015, of the City of Memphis' Plan of Operation for the T. E. Maxson Wastewater Treatment Plant Improvements project as proposed under Loan No. SRF 2015-355.

This letter, along with the enclosed document bearing our official stamp, constitutes the formal approval of the Plan of Operation.

If you have any questions, please contact me at (615) 532-0482 or *rick.hogshead@tn.gov*.

Sincerely,



Rick Hogshead, Technical Section
State Revolving Fund Loan Program

Enclosure: Approved Plan of Operation

cc: Mr. Paul Patterson, Department of Public Works, Memphis, TN (via email at *paul.patterson@memphistn.gov*)
Mr. Bobby Allen, P.E., Department of Public Works, Memphis, TN (via email at *bobby.allen@memphistn.gov*)
Mr. Scott Morgan, P.E., Department of Public Works, Memphis, TN (via email at *scott.morgan@memphistn.gov*)
Mr. Ed Hargraves, P.E., A2H, Lakeland, TN (via email at *edwardh@a2h.com*)
Mr. Sherwin Smith, Director, SRF Loan Program (via email)
Mr. Sam Gaddipati, Environmental Manager, SRF Loan Program (via email)
Dr. Bagher Sami, Administrative Section Manager, SRF Loan Program (via email)
Ms. Felicia Freeman, Technical Section, SRF Loan Program (via email)
File Copy (Memphis, SRF 2015-355, Operational Documents File)



TENNESSEE

A C WHARTON, JR. - Mayor
JACK SAMMONS - Chief Administrative Officer
DIVISION OF PUBLIC WORKS
ROBERT KNECHT - Interim Director

August 27, 2015

Mr. Rick Hogshead
Tennessee Department of Environment and Conservation
Division of Water Resources
State Revolving Fund Loan Program
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 12th Floor
Nashville, TN 37243



RE: Certification of Plan of Operation
Memphis (Shelby County), Tennessee
Loan No. SRF 2015-355, T.E. Maxson Wastewater Treatment Plant Improvements Project

Dear Mr. Hogshead:

In lieu of a Plan of Operation, the City of Memphis certifies the following:

1. The City of Memphis has trained operation and maintenance personnel, including a chief operator, that are currently on staff, and that the personnel will receive training on an as-needed basis.
2. The City of Memphis has adequate equipment and supplies, and personnel are trained concerning necessary records and record keeping.
3. The City of Memphis has a written Operation and Maintenance Manual that describes their process control procedures, safety program, emergency operating plan, and maintenance management program.
4. The City of Memphis has sufficient funding for operation and maintenance activities over the twenty-year life of the loan for this project.
5. The City of Memphis has evaluated their wastewater treatment facilities for improved water and energy efficiency and will be implementing these conservation efforts within their treatment works to the maximum extent practicable for this project.

Sincerely, [REDACTED]

Robert Knecht
Interim Director of Public Works

cc: Paul Patterson, City of Memphis
Ed Hargraves, A2H